

Claims

We claim:

1. A multilayer structure for packaging bone-in meat comprising:

an outer layer comprising a blend of linear low density polyethylene and low
5 density polyethylene;

a first polyamide layer comprising a blend of between about 70% by weight and
about 99% by weight semi-crystalline polyamide and about 1% by weight to about 30% by
weight amorphous polyamide;

a first tie layer disposed between said outer layer and said first polyamide layer;

10 a barrier layer disposed adjacent said first polyamide layer wherein said barrier
layer comprises ethylene vinyl alcohol copolymer having an ethylene content of between
about 27 mol % and about 42 mol %;

a second polyamide layer disposed adjacent said barrier layer comprising a blend of
between about 70% by weight and about 99% by weight semi-crystalline polyamide, and
15 between about 1% by weight and about 30% by weight amorphous polyamide;

a sealant layer comprising a blend of linear low density polyethylene and low
density polyethylene wherein said sealant layer comprises a greater volume percent of the
multilayer structure than said outer layer; and

20 a second tie layer disposed between said sealant layer and said second polyamide
layer.

2. The multilayer structure of claim 1 wherein said first and second polyamide layers each
comprise a blend of between about 85% by weight and about 99% by weight semi-

crystalline polyamide and between about 1% by weight and about 15% by weight amorphous polyamide.

3. The multilayer structure of claim 1 wherein said first and second polyamide layers each comprise a blend of between about 60% by weight and about 80% by weight of a first
5 semi-crystalline polyamide, between about 10% by weight and about 30% by weight of a second semi-crystalline polyamide, and between about 1% by weight and about 30% by weight amorphous polyamide.

4. The multilayer structure of claim 1 wherein said first and said second polyamide layers comprise about an equal percent by volume of the multilayer structure.

10 5. The multilayer structure of claim 1 wherein the outer layer is between about 15% by volume and about 20% by volume of the multilayer structure and the sealant layer is between about 25% by volume and about 30% by volume of the multilayer structure.

6. The multilayer structure of claim 1 wherein said multilayer structure is oriented.

7. The multilayer structure of claim 6 wherein said multilayer structure is annealed.

15 8. The multilayer structure of claim 1 wherein said multilayer structure is moisturized by the application of water to said multilayer structure.

9. The multilayer structure of claim 1 wherein said multilayer structure is plasticized.

10. The multilayer structure of claim 1 wherein said multilayer structure is irradiated to promote crosslinking between the layers of said multilayer structure.

20 11. The multilayer structure of claim 1 wherein said multilayer structure is irradiated to promote crosslinking within a layer of said multilayer structure.

12. The multilayer structure of claim 1 wherein all layers are coextruded to form said multilayer structure.

13. The multilayer structure of claim 1 wherein said multilayer structure is between about 1 mil and about 8 mils thick.

14. The multilayer structure of claim 1 wherein said multilayer structure is between about 1.5 mils and about 5 mils thick.

5 15. A package for bone-in meat comprising:

a first wall comprising a multilayer structure comprising an outer layer comprising a blend of linear low density polyethylene and low density polyethylene; a first polyamide layer comprising a blend of about 70% by weight to about 99% by weight semi-crystalline polyamide and about 1% by weight to about 30% by weight amorphous polyamide; a first
10 tie layer disposed between said outer layer and said first polyamide layer; a barrier layer disposed adjacent to said first polyamide layer wherein said barrier layer comprises ethylene vinyl alcohol copolymer having an ethylene content of between about 27 mol % and about 42 mol %; a second polyamide layer disposed adjacent said barrier layer comprising a blend of about 70% by weight to about 99% by weight semi-crystalline
15 polyamide and about 1% by weight to about 30% by weight amorphous polyamide; a sealant layer comprising a blend of linear low density polyethylene and low density polyethylene wherein said sealant layer comprises a greater volume percent of the multilayer structure than said outer layer; and a second tie layer disposed between said sealant layer and said second polyamide layer.

20 16. The package of claim 15 further comprising a bone-in meat product within the package.

17. The package of claim 16 wherein said multilayer structure is heat-shrunk around said bone-in meat product.

18. The package of claim 15 wherein said first and second polyamide layers each comprise a blend of between about 85% by weight and about 99% by weight semi-crystalline polyamide and between about 1% by weight and about 15% by weight amorphous polyamide.
- 5 19. The package of claim 15 wherein said first and second polyamide layers each comprise a blend of between about 60% by weight and about 80% by weight of a first semi-crystalline polyamide, between about 10% by weight and about 30% by of a second semi-crystalline polyamide, and between about 1% by weight and about 30% by weight amorphous polyamide.
- 10 20. The package of claim 15 wherein said first and second polyamide layers comprise about an equal percent by volume of the multilayer structure.
21. The package of claim 15 wherein said multilayer structure is oriented and heat-shrinkable.
22. The package of claim 21 wherein said multilayer structure is annealed.
- 15 23. The package of claim 15 wherein said multilayer structure is moisturized by the application of water to said multilayer structure.
24. The package of claim 15 wherein said multilayer structure is irradiated to promote crosslinking between the layers of said multilayer structure.
25. The package of claim 15 wherein said outer layer of the multilayer structure is
20 between about 15% by volume and about 20% by volume of the multilayer structure and the sealant layer of the multilayer structure is between about 25% by volume and about 30% by volume of the multilayer structure.

26. The package of claim 15 wherein said multilayer structure is irradiated to promote crosslinking within a layer of said multilayer structure.

27. The package of claim 15 wherein said multilayer structure is plasticized.

28. The package of claim 15 wherein all layers of said multilayer structure are coextruded to form said multilayer structure.

29. The package of claim 15 wherein said multilayer structure is between about 1 mil and about 8 mils thick.

30. The package of claim 15 wherein said multilayer structure is between about 1.5 mils and about 5 mils thick.

31. The package of claim 15 wherein said package is in the form of a tube having a space therein for bone-in meat.

32. The package of claim 15 wherein said first wall is heat-sealed to a second wall and further wherein the first wall and the second wall form a space for bone-in meat.

33. A method of making a multilayer for packaging bone-in meat comprising the steps of:

coextruding a multilayer structure comprising an outer layer comprising a blend of linear low density polyethylene and low density polyethylene; a first polyamide layer comprising a blend of between about 70% by weight and about 99% by weight semi-crystalline polyamide and about 1% by weight to about 30% by weight amorphous polyamide; a first tie layer disposed between said outer layer and said first polyamide layer; a barrier layer disposed adjacent said first polyamide layer wherein said barrier layer comprises ethylene vinyl alcohol copolymer having an ethylene content of between about 27 mol % and about 42 mol %; a second polyamide layer disposed adjacent said barrier layer comprising a blend of between about 70% by weight and about 99% by weight semi-

crystalline polyamide, and between about 1% by weight and about 30% by weight amorphous polyamide; a sealant layer comprising a blend of linear low density polyethylene and low density polyethylene wherein said sealant layer comprises a greater volume percent of the multilayer structure than the outer layer; and a second tie layer
5 disposed between said sealant layer and said second polyamide layer; and

biaxially orienting said multilayer structure.

34. The method of claim 33 wherein said outer layer is between about 15% by volume and about 20% by volume of the multilayer structure and the heat sealant layer is between about 25% by volume and about 30% by volume of the multilayer structure.

10 35. The method of claim 33 further comprising the step of annealing said multilayer structure.

36. The method of claim 33 further comprising the step of irradiating said multilayer structure to promote crosslinking between the layers of said multilayer structure.

15 37. The method of claim 33 further comprising the step of irradiating said multilayer structure to promote crosslinking within a layer of said multilayer structure.

38. The method of claim 33 further comprising the step of moisturizing said multilayer structure by applying water to said multilayer structure.

39. The method of claim 33 wherein said multilayer structure is between about 1 mil and about 8 mils thick.

20 40. The method of claim 33 wherein said multilayer structure is between about 1.5 mils and about 5 mils thick.